REQUEST FOR PROPOSAL

Integrated Water Use And Water Efficiency Calculator Software

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A. Introduction

This document provides background information on the objective and scope of a Request for Proposal ("RFP") required by Greenbuildingindex Sdn Bhd (GSB).

GSB is pursuing a new integrated water use and water efficiency calculator software to perform calculations under the Water Efficiency Criteria of the GBI NRNC Tool and its variants.

B. Background

GSB is the administrator of the Green Building Index rating system and training of GBI Facilitators, Commissioning Specialists and Certifiers.

GBI accreditation for buildings is separated into two tiers. At the highest level is the GBI Accreditation Panel, the independent regulatory body for GBI accreditation. At the intermediate level are the GBI Certifiers, consisting of experienced professionals who conduct the assessment of project submissions.

Each GBI tool consists of 6 main criteria and Water Efficiency is the 5th criteria (denoted as WE in the NRNC tool) which carries 10 credits contributing to the overall score of 100 credits.

It is under the WE criteria that this RFP applies. GSB desires to streamline the way the credits under WE are calculated and submitted by having a common calculator to ease the calculating and the subsequent checking and assessment process.

C. Software Requirements

1. Objective

To have a comprehensive water efficiency software which will promote innovative and creative design solutions and provide the practitioner a complete calculator tool to achieve water efficiency in a green building in line with the credit requirements of water efficiency under the GBI tool

The software shall be under windows operating system platform and shall be able to be windows backward compatible to windows 7.

The proposed software will carry out a "facilitation" process for GBI's WE criteria that includes performing the following functions:

1. Calculate water consumption of water efficient fixtures versus GBI approved standard base fixtures

2. Generate water-use balancing diagram

3. Select and stipulate water efficient cooling towers

4. Water efficient landscaping through planting of local and adapted plants

5. Water efficient irrigation system

6. Recycling of waste water

7. Rainwater harvesting tank simulator

8. Return of Investment computation

The above sub-tools shall be integrated into a single GBI-WE software solution and made available over the Internet from GBI's website. This approach will then allow for a generic single version capable of regular updates downloaded into the user terminal.

Since the software also relies on meteorological data for rainfall in all regions of Malaysia, an update feature for this data will also be made available for upload every two years.

2. Water Efficient Fixtures

Database for generic water efficient fixtures with efficiency rated flowrates in line with WEPLS rating (SPAN). Pull down menus for the selection to obtain percentage savings in comparison with Base flowrates (BS 6700). Water use percentage savings for GBI WE3 credit will be automatically computed.

The tool will enable practitioners to seamlessly predict water savings for different selections of water fixtures to enable informed decisions by owners.

3. Water-Use Balancing Diagram

Automated calculator for water use, represented schematically (similar to flowchart), indicating how the building/factory uses water in totality.

This is especially helpful for factories where the processes consume substantial water. The diagram will assist in identifying and analysing whether waste water recycling can be feasibly implemented.

The user can provide the anticipated use of water and the quality of water required for each type of water usage, and a water-use balancing diagram will be generated representing the overall scheme of water use. The user may then determine the various computed scenarios of resultant water consumption vis a vis the water efficiency strategy adopted.

Having a water-use balancing diagram will also aid GBI Certifiers in visualising the overall building/factory wide strategy on how water conservation/efficiency strategies are being adopted.

4. Selection of water efficient cooling towers

Not all green practitioners are sufficiently conversant with air conditioning system. Hence, to aid users who are not from the air conditioning background, this tool will include computation of water use due to cooling towers.

Determination of water use by cooling towers is subjected to the air conditioning load and the type of system in use. User can select the type of air conditioning system adopted together with the cooling capacity of the system, and the tool will compute the amount of water required to operate the system. In addition, the tool will also estimate the volume of water per day required to compensate for the water losses due to water drift and evaporation during the operation of the system.

5. Water efficient landscaping through planting of local and adapted plants

The tool will aid in quantifying water efficient landscaping through selection of water efficient landscaping plants. Generally, landscape plants are divided into three categories of low, moderate and high water requirements. The tool will estimate the amount of water required for irrigation and calculate the resultant water savings if plants with lower water requirements are considered. Combination of landscape planting areas will primarily be the basis of the estimation.

Database of local and adapted landscape plants, of common variety, will be incorporated in the tool. The water consumption calculator will also take into account the different regions of Malaysia where the landscape is planned for and the evotranspiration rate of the plants, and soil conditions.

A customized input for non-ordinary plants will also be included for plants which are not in the database, and can be kept as customized data for future use.

6. Water efficient irrigation system

The tool will deliberate the efficiency of designing the irrigation system for landscaping with various types of available irrigation system, i.e. sprinkler system, drip irrigation, and generic garden taps.

Comparison between having manually irrigated landscape and utilizing a more automated and efficient irrigation system will form the basis of comparison for landscape water use efficiency.

7. Recycling of waste water

In an occupied building, waste water is constantly available from the occupants. Currently waste water is discharged to the municipal sewerage line, and if the building/complex is large enough, its own sewerage treatment plant.

There is potential for every building to recycle its waste water for reuse in the building. The use of recycled waste water depends on what it is used for. This in turn dictates the type of filtration and sterilization process the waste water is to be subjected to.

Secondary use of recycled waste water not in contact with occupants, is limited to external use and is viable with minimal filtration and sterilization.

In industrial processes where significant volume of waste water is produced, secondary use of treated recycled waste water can be considered for the process itself and thus be available in the process loop which will be economically and environmentally beneficial in the long run.

The tool can be used to explore the savings and the viability in assisting the use of recycled waste water in improving the efficiency of water use in the buildings and/or their processes.

8. **Rainwater harvesting tank simulator**

The tool estimates the rainwater harvesting tank volume required to achieve a preset percentage of saving of potable water.

Two criteria influence the amount of rainwater available to be harvested; namely the catchment area and rainfall pattern with reference to the building site and the location of the project.

The user inputs the volume of rainwater required to be harvested based on the requirement set in the water balancing strategy, and run the simulation to estimate the volume requirement of the rainwater harvesting tank.

The tool will use the preceding year's test reference year data (TRY) for simulation. The TRY data shall be obtained from the meteorological department for the various locations within Malaysia. The data will also be updated every two years.

Drop down menus will be incorporated in the tool for the user to select various runoff coefficients for different catchment area, material, and location of the site.

An annual rainfall simulation will be executed by the tool with a graph being generated to indicate the rainfall pattern, and the filling up of the rainwater tank to inform the user when the tank in under make-up potable water mode. The make-up potable water will also be taken into account in the calculation for water savings.

9. **ROI Tool**

There will also be a cost analysis tool to calculate the ROI (Return of Investment) of the system selected and designed. Comparison tables will be generated and different case analysis can be stored and recalled for further and future reference.

The cost analysis tool will require various inputs to the system detailing the cost of equipment and materials used, including components and equipment used for innovative designs. The end result will then be compared with a base design.

The tool will take cognizance of this and do the various computations and analysis.

D. Scope of Works

1. Available Information

I.   Appendix A - GBI NRNC & NREB Tools highlighting the applicable section of the intended software

II. Sample Calculation Sheets & Screenshots

    a. Water efficient fixtures versus GBI approved standard base fixtures

    b. Water-use balancing diagram

    c. Select and stipulate water efficient cooling towers

    d. Water efficient landscaping

    e. Water efficient irrigation system

    f. Recycling of waste water

    g. Rainwater harvesting tank simulator

    h. Return of Investment computation

2. Domain Experts

GSB will assign a working group of domain experts who will provide the calculation methods and methodology on how to input the information, and how the output is to be calculated and presented.

To produce a windows based (backward compatible to Windows 7)

E. Queries and Clarification

Participants may submit queries to the following email

Email :

Attention:

All queries must be submitted no later than 12pm,   17 /10 / 2016

Queries received after this date and time will not be accepted.

F. SUBMISSION REQUIREMENTS

Deliverables

Each participant must submit the following:

1. Company Profile with related Projects

2. Capability Statement

3. Proposed development methodology of the software

4. Development schedule

5. Fees Proposal

G. Disqualification

1. Failure by any participant to comply with the RFP Rules and Conditions may lead to immediate disqualification from the process.

2. Late submission of any entry at any stage may be disqualified.

3. GSB shall have the sole and final decision in the acceptance or disqualification of any entry that may have infringed any of the RFP Rules and Conditions.

General

If none of the submission meets the expected criteria, GSB reserves the right not to accept any of the proposal and the decision would be solely at the discretion of GSB.

GSB does not need to disclose reasons and shall not be subject to query. In any event, GSB is not bound to appoint any software developer based on the proposal submitted and reserves the right to appoint any party at their sole discretion.

H. TERMS AND CONDITIONS

Confidentiality

This RFP is strictly confidential and is made available on the express understanding that the Software Developer will use it only for the purposes of formulating the proposal. All information made available to the Software Developer on the strict understanding that it will not be shown or passed to any person who is not a current employee of the Software Developer's organisation or not involved in the formulation of the proposal.

All materials and data whether written, oral, or in a visual or electronic form, transmitted or made available by GSB in relation to this RFP or in the course of evaluating the Software Developer are to be treated as confidential information.

The Software Developer will take all reasonable measures to protect the secrecy of and avoid disclosure or use of confidential information using the same degree of care and diligence as the Software Developer will use to protect its own confidential information of a similar nature; and maintain the confidentiality of confidential information at all times and to keep all confidential information secure and protected against theft, damage, loss or unauthorized access, and not at any time, directly or indirectly, use, disclose, exploit, copy or modify any confidential information, or authorize or permit any third party to do the same.

This RFP shall not be reproduced, published, or disclosed to others, or used for any other purpose, or duplicated in whole or in part, without the prior written approval of GSB. Software Developer is not permitted to make any public announcement or release any information regarding this RFP without GSB's prior written approval. GSB reserves the rights to keep confidential the evaluation approach and evaluation criteria adopted throughout the selection process.

Ownership of Deliverables

GSB shall have the right to use the deliverables provided by Software Developer and such deliverables will become GSB's property. GSB may distribute the deliverables and other materials provided by the Software Developer internally and outside of GSB without prior notification to the Software Developer.

Expenses

The Software Developer shall bear all expenses in relation to the preparation, submission and presentation of the proposal and GSB will not be responsible for any of the expenses regardless of the conduct or outcome of the RFP process. This RFP does not constitute an offer or invitation to enter into any agreement or arrangement and does not commit GSB to accept any offer made by the Software developer, award a contract or to engage in negotiations with any Software Developer. In addition, nothing contained herein shall be taken as a recommendation to undertake the Proposal or as a commitment on the part of GSB to accept the Proposal. No imbursement cost may be incurred by the Software Developer in anticipation of an award.

Changes to RFP

GSB reserves the right to make amendments to the RFP for any reason it deems fit. In the event any amendments are made to the RFP, Software Developer will be notified accordingly.

Termination of the RFP Process

GSB reserves the right (without notice or recourse) to terminate the RFP process at any time without any liability, and makes no commitment to the effect that the RFP process will result in a business transaction with one or more Software Developer.

Omissions/Errors

Software Developer is advised to study the RFP carefully before submitting the proposal. The onus is on the Software Developer to ensure that a complete proposal is submitted. GSB will not entertain any request made after the submission closing date for variation or submission of additional quotes for items left out or correction of errors in the original submission on any grounds whatsoever.

Disclaimer

GSB, its directors, employees, advisers, agents, representatives and nominees do not accept any responsibility for, and do not make any representation or warranty, whether express or implied, as to the adequacy, accuracy or completeness of the information contained in this document. GSB expressly disclaims any and all liability (whether contractual or in tort) for any information or statement contained in, and any omission from, this document, as well as for any other information, whether written, oral or in a visual or an electronic form, transmitted or made available to any Software Developer relating to the submission of the RFP. Each Software Developer shall not rely on GSB to enquire, check or verify any information on the Software Developer's behalf. In all cases, the Software Developer should rely on its own investigations and analysis in preparing the Proposal.

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TECHNICAL PROPOSAL

SUBMISSION REQUIREMENTS

Deliverables for Technical Proposal

Each participant must submit the following:

6. Company Profile with related Projects

7. Capability Statement

8. Proposed development methodology of the software

9. Development schedule

The proposed software will carry out a "facilitation" process for GBI's WE criteria that includes performing the following functions:

1. Calculate water consumption of water efficient fixtures versus GBI approved standard base fixtures
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Fees Proposal

The fee proposal shall be separately submitted in a sealed envelope to Green Building Index Sdn Bhd

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FINANCIAL PROPOSAL

SUBMISSION REQUIREMENTS

Summary format of Financial proposal

Each participant must submit the summary of their financial proposals in the following tables. Participants may submit further details as they see necessary:

MAIN SUMMARY FINANCIAL PROPOSAL

	Scope / Description of works	Cost Breakdown (RM)
1	**Software Development**	
1.1	Tool Programmers/Domain Experts	
1.2	Database Population/Data Collation	
1.3	Software Solution Provider	
	1. Calculate water consumption of water efficient fixtures versus GBI approved standard base fixtures 2. Generate water-use balancing diagram 3. Select and stipulate water efficient cooling towers 4. Water efficient landscaping through planting of local and adapted plants 5. Water efficient irrigation system 6. Recycling of waste water 7. Rainwater harvesting tank simulator 8. Return of Investment computation	
2	**TRY updates (Every 2 Years for 10 years)** To keep the software data relevant and up to date, GBIAP intends to update the meteorological data database which is an integral part of the simulation program. Based on 40 stations throughout Malaysia	
3	**Training Program**	
3.1	Development of Training program and user manuals for the WE Tools	
3.2	Conduct one day training programs for the use of the WE Tools at the following venues. Do not include cost of	

	travel, accommodations, venue and management of the events.	
	Kuala Lumpur 3 times	
	Penang	
	Johor Bharu	
	Kota Kinabalu	
	Kuching	
4	**Other Cost not listed above list below (State none if not required)**	
4.1		
4.2		
4.3		
5.	**GST cost**	
	TOTAL COST	

DEVELOPMENT AND PAYMENT SCHEDULES

	Project Time Line / Payment Schedule	Months	Cost Breakdown (RM)
No.	Activity		
1	Establishing Format & Baselines References		
2	Establishing Inputs, Formulas, and Simulation Methodology		
3	Database Tabulation and Data Collation		
4	Establishing Software Architecture		
5	Domain Expert Review		
6	Software Programming		
7	Tool Module Review 1		
8	Tool Module Review 2		
9	Integrated Software Test and Review		

10	Public Testing		
11	Final Tweaks & Software Release		
	TOTAL		

Submission method

The fee proposal shall be separately submitted in a sealed envelope to Board of Directors, Greenbuildingindex Sdn Bhd

APPENDIX A

5 WATER EFFICIENCY (WE)
WATER HARVESTING & RECYCLING | INCREASED EFFICIENCY
10 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS	MAX POINTS	SCORE
WATER HARVESTING & RECYCLING				
WE1	**RAINWATER HARVESTING**			
	Encourage rainwater harvesting that will lead to reduction in potable water consumption:		**2**	
	Rainwater harvesting that leads to ≥ 15% reduction in potable water consumption, *OR*	1		
	Rainwater harvesting that leads to ≥ 30% reduction in potable water consumption	2		
WE2	**WATER RECYCLING**			
	Encourage water recycling that will lead to reduction in potable water consumption:		**2**	
	Treat and recycle ≥ 10% wastewater leading to reduction in potable water consumption, *OR*	1		
	Treat and recycle ≥ 30% wastewater leading to reduction in potable water consumption	2		
INCREASED EFFICIENCY				
WE3	**WATER EFFICIENT - IRRIGATION/LANDSCAPING**			
	Encourage the design of system that does not require the use of potable water supply from the local water authority:		**2**	
	Reduce potable water consumption for landscape irrigation by ≥ 50% (e.g. through use of native or adaptive plants to reduce or eliminate irrigation requirement, *OR*	1		
	Do not use potable water at all for landscape irrigation	2		
WE4	**WATER EFFICIENT FITTINGS**			
	Encourage reduction in potable water consumption through use of efficient devices:		**2**	
	Reduce annual potable water consumption by ≥ 30%, *OR*	1		
	Reduce annual potable water consumption by ≥ 50%	2		
WE5	**METERING & LEAK DETECTION SYSTEM**			
	Encourage the design of systems that monitors and manages water consumption:		**2**	
	Use of sub-meters to monitor and manage major water usage for cooling towers, irrigation, kitchens and tenancy use	1		
	Link all water sub-meters to EMS to facilitate early detection of water leakage	1		
WATER EFFICIENCY (WE) TOTAL			**10**	

5 WATER EFFICIENCY (WE)
WATER HARVESTING & RECYCLING | INCREASED EFFICIENCY
12 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS	MAX POINTS	SCORE
WATER HARVESTING & RECYCLING				
WE1	**RAINWATER HARVESTING**			
	Encourage rainwater harvesting that will lead to reduction in potable water consumption:		**3**	
	Rainwater harvesting that leads to ≥ 5% reduction in potable water consumption, *OR*	1		
	Rainwater harvesting that leads to ≥ 15% reduction in potable water consumption, *OR*	2		
	Rainwater harvesting that leads to ≥ 30% reduction in potable water consumption	3		
WE2	**WATER RECYCLING**			
	Encourage water recycling that will lead to reduction in potable water consumption:-		**2**	
	Treat and recycle ≥ 10% wastewater leading to reduction in potable water consumption, *OR*	1		
	Treat and recycle ≥ 30% wastewater leading to reduction in potable water consumption	2		
INCREASED EFFICIENCY				
WE3	**WATER EFFICIENT - IRRIGATION/LANDSCAPING**			
	Reduce potable water consumption for landscape irrigation by:		**2**	
	1) 50%	1		
	2) 100%	2		
WE4	**WATER EFFICIENT FITTINGS**			
	Encourage reduction in potable water consumption through use of efficient devices:		**3**	
	1) With reference to Utility calculations;			
	• Reduce annual potable water consumption by ≥ 20%, *OR*	1		
	• Reduce annual potable water consumption by ≥ 30%, *OR*	2		
	• Reduce annual potable water consumption by ≥ 50%	3		
	OR			
	2) From existing 3-year average water consumption record, reduce annual potable water use by:			
	• ≥ 20%	1		
	• ≥ 30%	2		
	• ≥ 50%	3		
WE5	**METERING & LEAK DETECTION SYSTEM**			
	Encourage the design of systems that monitors and manages water consumption:		**2**	
	Use of sub-meters to monitor and manage major water usage for cooling towers, irrigation, kitchens and tenancy use	1		
	Link all water sub-meters to EMS to facilitate early detection of water leakage	1		
	WATER EFFICIENCY (WE) TOTAL		**12**	